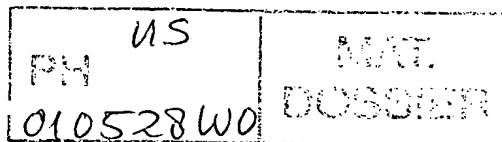


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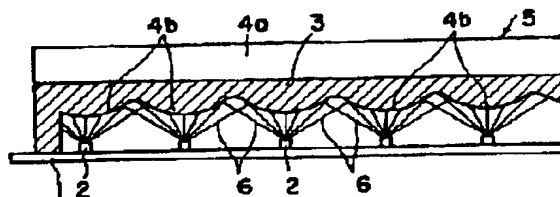
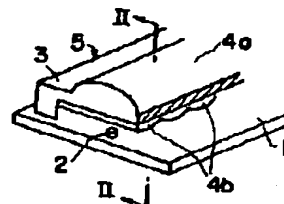
APPLICATION DATE : 12-06-90
APPLICATION NUMBER : 02153720

APPLICANT : TOSHIBA CORP;

INVENTOR : MURANAKA TETSUYA;

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TITLE : LIGHT EMITTING DIODE ARRAY



ABSTRACT : PURPOSE: To enlarge the width of an incoming beam without lowering illuminance by arranging two sets of lens, which are to be provided at the ceiling board of a case, such that, for one set, the axes of the lenses line up in parallel with the array directions of light emitting diodes, and that, for the other set, the axes line up perpendicularly to them.

CONSTITUTION: LED elements 2 are surrounded by the case 5, whose ceiling board 3 are provided, at both surface and rear, with convex lens 4a and 4b semicircular in cross section. The lens 4a are arranged so that the center axes may line up in parallel with the array direction of the LED elements 2. The convex lens 4b on the side opposite to the elements 2 are arranged, so that each projection end may come right above each element 2, in the direction that the center axes cross the center axes of the lenses 4a at right angles and in plural rows extending in the width direction of the case 5. Each lens 4b absorbs light efficiently in the array direction of the elements 2, and takes it into the lens 4b, and the lens 4a condenses it further in the width direction of a wiring board 1, so the quantity of emission as an array increases, and even if one uses a convex lens of such small curvature that the luminous beam width widens, the illuminance never falls.

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